

237

7

REPORT

ON THE ATTACK OF EPIDEMIC CHOLERA IN AGRA AND CENTRAL INDIA DURING THE YEAR 1861.

BY

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There was great deficiency of rain, during the rainy season, last year ; and a consequent very scanty crop of the heavier grains ; and the "Mahawut" or rain which usually falls at the end of the year, was wanting. This last is required, in addition to irrigation to secure a good crop of wheat, barley and gram in the cold season, which form the staple food of the people. The consequence of the deficiency of rain in both seasons, was famine over N. W. Provinces and part of the Punjab. During famine seasons stores of grain are opened by the natives, which have been kept closed for many years. I saw one of these "khoes" or grain pits that contained 20,000 maunds of wheat, which had been stored in the centre of the Fort at Bhurtpore for 25 years ; the contents of which were distributed to the people. The grain had a disagreeable smell ; but with the exception of the lower stratum, which was black, it was eaten eagerly. Numerous pits of old standing viz.; from 7 to 15 years, were opened at Agra, and in other parts of the country, and the contents readily consumed by the people, mixed with fresh grain ; some pits were also opened in Cantonments, of 23 years standing, in which, however, the contents were so rotten that they were ordered by the authorities to be thrown into the river. This condemned grain was collected, by the starving people from the river, or plundered from the carts that conveyed it there. Wheat keeps well in dry places for from 3 to 5 years only. But barley, jowar and gram keep for 10 years without injury.

The immediate effect attributed by the people to using this damaged grain, was wasting of the body, with a tendency to purging, when wholesome food was resumed.

The weather, as in 1856, also a cholera year, was variable with easterly winds, and clouds in the earlier part of the hot season, and there was very little of the regular hot west wind. The rains commenced on the 18th of June, and continued, with few intervals of clear weather, until the middle of September. The fall of rain has been greater, and the crops have been more luxuriant, than in any year since I have been in India. The bajra crops, usually from 5 to 6 feet high, were in many places from 12 to 14 feet high, with grain heads from 14 to 16 inches long. It was unusually cloudy during the rainy season. There was much lightning and thunder, and the falls of rain were frequently very heavy and partial ; for instance, there was a heavy fall of between two and three inches in Cantonments on the 30th May, and the 26th July, and only a slight shower at the Central Jail, where the meteorological registers, that accompany this report, were kept by

Dr. Walker. The same Officer reports that the ozonometer has all throughout the Epidemic shown a high rate, much higher than last year, viz :

MEAN AMOUNT OF

	1860.	1861.
June	1.30.	3.20.
July	1.40.	3.20.
August	1.10.	1. 9.

The health of the Troops and Prisoners had been very good, during the cold and hot seasons. Previous to the out-break of Cholera, there were comparatively few cases of coup de soleil in May and June at Agra, and very little fever at Agra or Gwalior, Diarrhoea was very rare, and there were few cases of Sporadic Cholera, from the termination of the Epidemic attack in September last, till it re-appeared in July. There were three marked and fatal cases in the 42nd Royal Highlanders immediately after the Rains set in on the 21st, 28th, and 29th of June; but therewas no Diarrhoea, and no fresh case in that corps till the 14th July, so I have considered these as Sporadic cases.

The present Epidemic of Cholera first appeared in the beginning of May in the village of Ghopalghur, about 40 miles North West of the City of Bhurt-pore ; but it is also said, there were cases at Kaitwar, eight miles off, in the end of April. It extended in a Northerly direction and reached the City of Muttra on the 1st June (the first case in Cantonments was on the 16th July) and Goorgaon on the 16th June, and Delhi on the 6th July ; from whence it extended to Meerut on the 6th July, Umballa the 15th July, and Lahore 7th August. This is the course which I anticipated the disease would follow, during the hot and rainy seasons, and I consider it to be the continuation of the Epidemic attack of 1860, on which I reported last October. This course is also analogous to that followed by the previous Epidemic attacks of Cholera in 1851 and 1856. It is of the utmost importance to watch the progressive movement of the disease over the country, its limited duration and its residence in particular localities, as indicating removal from the locality, whilst the disease is running its course. Our power of treating the disease, when fully developed, by medicine is often inefficacious and can only be relied on in the premonitory stages. The power of *change of locality*, as an invaluable remedy, in moderating the loss of life, has been confirmed during the present Epidemic. By extending this mode of treatment, *by moving the Troops from the station*, on the approach of the disease, or on its first appearance, the attack might bc avoided or rendered feeble. This will be practicable when Rail-ways are available, which it is hoped will be soon. In most instances the Troops might return safely in a month. Had this means of conveyance been available, the European Troops should have moved from Agra to Cawnpore, on the 10th July, and returned on the 12th August ; and the Troops moved from Morar on the 25th July, and returned the 1st September. Appended is a report from Captain Walter, Political Agent at Bhurtapore, shewing the commencement and early progress of the disease, with a Map of the Bhurtapore territory.

The Epidemic extended, in a Westerly direction, to Ulwar, Jeypore and Ajmere. The disease appeared to radiate from Ghopalghur, in the Bhurt-pore territory, *as a centre*, just as it radiated from Agra, in 1856. The peculiarity in the present Epidemic, consists in its returning, in a Southerly direction, to Agra and Gwalior, *Stations that had been affected during the previous year*. This may be attributed to the existence of the Famine which pervaded, N. W. Provinces, during this year. The disease appeared first at Muttra and Agra, amongst the starving population, collected at the famine kitchens which were established for the purpose of feeding them. The first case admitted into the Thomason Hospital, came from the famine kitchen at Shabgunge,

in the suburbs of Agra, on the 11th of June; and it was reported that the man had come from Muttra. At the Kundowlie kitchen 10 miles North of Agra, there were 23 deaths on the 13th June. It was visited by Assistant Surgeon Currie on the 14th ; and he died from cholera, on the 15th. The disease disappeared from the kitchens in the district, after the rains set in. It showed itself in the City of Agra, in the end of June.

Cholera appeared in the Central Prison, on the 6th July ; and became very severe on the 8th and 9th ; disappearing on the 10th of August.

The first case amongst the Europeans in Cantonments, was in the 107th Regiment, on the 7th July ; there were 2 more cases on the 11th. The first case in the 42nd Royal Highlanders, was on the 14th July. The disease reached its height, in both Regiments on the 25th July ; and gradually subsided until the 14th August.

The first case in the 42nd Regiment Native Infantry, occurred on the 18th July. There were only 5 fatal cases in this Corps ; and 2 in the Police Battalion.

At Gwalior the disease appeared amongst the natives, in the *Lushker* and City, in the middle of July, and proved very fatal. The first case amongst the Europeans in the Cantonments at Morar, was in a child of Her Majesty's 27th Regiment, on the 22nd July. It appeared amongst the men of that Corps, on the 25th, and on the same day in the Detachment of Her Majesty 52nd Light Infantry, in the Fortress of Gwalior : and in the Artillery on the 29th. There were 3 Native Corps, and the Camel Corps, at Morar, during the Epidemic, but there was not a single case of Cholera amongst them, There was no Cholera amongst the European or Native Troops, at the Stations south of Gwalior, viz., Seepree, Jhansie, and Lullutpore.

The symptoms of the disease were analogous to those that appeared last year. They were similar in all the stations, and alike in Europeans and Natives. The disease was very intense, running its fatal course often in a few hours ; and in some cases, with little vomiting or purging. In many cases, the attack commenced about three o'clock A. M., and the disease had a marked periodical type, particularly as the season advanced. Previous to the Epidemic there were scarcely any cases of Diarrhoea, but during its prevalence, there were few who escaped attacks of Diarrhoea, more or less severe. Diarrhoea formed the first stage of the disease, in most cases ; which if not checked, was followed by congee stools and collapse. This stage lasted for several days, in some cases, in others only half an hour : collapse coming on suddenly, with profuse congee evacuations, cramps, livid, congested shrunk eyes, whispering voice, craving for water, diminishing powers of life, and increasing restlessness, sinking, or with an effort at reaction at intervals of twelve hours. When reaction took place, the evacuations became dark, and the urine, which had been suppressed flowed. The evacuations by degrees became lighter and less frequent. In some cases, when collapse had continued long, low typhoid fever followed ; in others, there were violent head symptoms particularly in those who had used Chloroform. In others Diarrhoea continued troublesome ; some cases were followed by boils ; but in most instances, as the symptoms of the disease subsided, only debility remained. Many of the cases had afterward attacks of ague and fever till the cold season advanced.

Diarrhoea or Dysentery or any increased action of the bowels by purgative medicines, or undigested food, were very liable to be followed by watery Cholera purging and collapse. Nervous prostration from previous disease, mental fear, or bodily fatigue, and the exhaustion which follows over excitement from drink, predispose the person to the development of the disease. Fresh arrivals from unaffected stations, to one where Cholera prevails, are peculiarly liable to attack. During the prevalence of the Epidemic the disease may be

developed, independently of contagion ; and when this influence does not prevail, as in sporadic cases, the disease is not transmissible by contact ; but during the Epidemic attack, the disease may be communicated by contact, or by the vicinity of Cholera evacuations. The disease may be imbibed by the system, and evacuated or digested by the organs, where the *vis medicatrix natura* is healthy and strong ; but when the powers of nature are feeble, they are overcome by the poison, and Cholera is developed.

There was a marked difference in the Military Cantonments in this, and in all former attacks that have come under my observation, between the number of European and Native Troops attacked, and also between the number of Native Troops, and prisoners ; the Native Troops suffering slightly, whilst the Europeans and Prisoners, suffered severely. The locality is the same, and the ordinary food the same, at the same season, but the Europeans and Prisoners use *Laterines* and the Sepoys do not. When the Cholera raged in Calcutta, the sailors in ships anchored opposite the common sewers, were affected with the disease, until anchoring in that position was forbidden. Changing the Camping ground, or Barracks, and thus leaving the vicinity of the evacuations, appears to leave the emanations and the disease behind.

The advantage of moving into Camp, as a prophylactic against Cholera was very decided, during the present Epidemic. The Prisoners were first moved. The disease became severe on the 8th and 9th July, (there were 22 admissions and nine deaths on the 9th.) On the 11th, 850 Prisoners went into tents on the Poohyah Ghat Road about three miles off and changed ground on the third-day : and the convalescent depot at Secundra, four miles off, was increased from 250 to 300. There were only four cases among the Pooyah Ghat party, and one from Secundra.

The disease rapidly subsided in the Jail ; and the Prisoners returned on the 18th. The commencement of the attack was as severe as last year, and the disease equally intense ; but the mortality was only 2 23 per cent. viz. 66 out of nearly 3,000 Prisoners (2,959) ; whereas last year the mortality was 8·33 per cent. viz. 172 out of nearly 2,000 (2,065). They were moved into Camp at a *later period* of the last attack, which was the probable cause of their greater mortality. Dr. Walker attributes the immunity of the men, in Camp, to their being *healthy* ; but as the most *weakly* men viz. the *convalescents* suffered comparatively less, both at Secundra, and after their return to the Jail, and as only five patients in Hospital out of 525 were attacked, this opinion has not much weight.

The disease became severe, in Cantonments, on the 24th and 25th July, (there were nine deaths on the 24th and eight on the 25th.) The Troops would have moved out into Camp on the 26th, but it poured down incessant rain. It rained on the 27th, but during a break in the morning, the 42nd Royal Highlanders marched to Secundra (eight miles) and occupied the corridors of Akbar's Tomb. They moved into tents on the 30th. There were two fatal cases on the day they moved out, two that night, and one case the next day. It may be fairly inferred that these men brought the disease with them. There were only two more fatal cases in Camp till they returned to Cantonments on the 13th August. The march of the 107th was similarly delayed till the 27th. The men went into the side buildings of the Taj two miles off. There was no case of the disease in this party for three days. They slept in their tents, about two miles off after the fourth day ; but resided in the Taj Gardens during the day. There was only one fatal case before they returned to Cantonments, on the 14th August. Each of the men got one of the Cholera pills, and an extra glass of grog, the night they moved out of Cantonments ; they said they wanted another pill next night, as they had not had such a good night's rest for many days. It was not

given, as there had not been a single case during the night or day ; but it would have been allowed, had the disease continued severe. The disease continued, in a moderate degree, amongst those who remained in Cantonments, in Hospital, or on duty on the sick, and in the Fort. There was an exacerbation of the disease in the Hospital, on the 31st, The men were moved out of the Hospital into a Barrack next day, and there were no fresh cases amongst them.

The camp selected for these occasions, should be pitched on high, dry, ground, and the men's cots should always be supplied, and only eight put into each tent.

The period of attack rarely exceeds a fortnight before it begins to subside. If this period can be *tided over* by prophylactic and preliminary treatment in Barracks, and the men's spirits keep good, they should remain in Barracks. But should the disease increase, and the mortality exceed one a day, or should the men get *shaky*, the troops should be moved into camp, at least a mile out of cantonments in the direction from whence the disease has advanced and change ground every second or third day. Moving into camp in the hot or rainy season, is dangerous, and very disagreeable. It is only justifiable as a means of avoiding a worse, and more certain danger.

On the approach of the Epidemic to the vicinity of Agra, particular attention was paid to all the conservancy arrangements. The old drains were cleared out, and fresh ones constructed. The men were carefully warned to avoid using unripe fruit, bazar pork, and any kind of food they found they could not digest easily. They were recommended to be moderate, in the use of alcoholic liquors, which was not always attended to when the disease became bad. They wore flannel belts, and changed wet clothes, when practicable. Sites in the vicinity were selected, to which the Troops would be moved, should the disease become severe ; and the Commissariat Officer instructed to be ready to move the camp equipage, at a short notice. When the disease appeared, native guards were substituted for European, where practicable, shooting matches, dancing, and games of all kinds were encouraged. The men were carefully inspected by the Medical Officers morning and evening, and small doses of Quinine and Cherytta, were given in the morning, with the effect of improving the tone of the stomach and digestion.

The most important prophylactic was the *early* use of the Cholera Pill, immediately the bowels became out of sorts, *without obliging the men to go to Hospital*. There is a natural antipathy to being sent to a Cholera Hospital, which leads the men to conceal their complaint, till the disease has advanced too far, for Medical treatment. The Pills were distributed to the Non-Commissioned Officers, in each Barrack, with instructions to give one to every man who asked for it, or *who went to the rear after gunfire at night ; and when a man went second time to give another pill, and send him to Hospital*. The first pill checked many cases, that if neglected, would have progressed to collapse. The men had confidence in them, and were more willing to go to Hospital, if the disease continued. The second pill kept the disease in check, until the Medical officer ordered more active remedies. This is an exceptional mode of treatment of soldiers, but this is an exceptional disease. The *EARLY* exhibition of the remedy is of essential importance, when half an hour's delay may allow the disease to advance beyond remedy. The men should be encouraged to tell the Doctor the effect of the pill, who will know something more is required should the stools continue white, though not frequent. There are many remedies, confidently recommended, as valuable in this early stage. Calomel and Opium, Brandy and Opium, Chloroform, Sulphuric acid, &c., &c. I prefer the pill, as being a efficacious remedy, convenient for distribution, keeping well, easily distributed and

not likely to do harm, if taken when not required. The natives have confidence in them, and have used several *lacs* of them during the late Epidemics and the European soldiers take them with confidence. They are composed of one part Opium, two parts black pepper and three parts asafœtida made into pills of five grains each.

The proportion of Patients in Hospital from other diseases, who are attacked is great. In these, various predisposing causes are in operation, as disease, debility and anxiety. The waiting men are exposed to unusual fatigue, and anxiety, as well as contagion, and suffered much. The effect on the native Hospital attendants is variously reported. In the Thomason Hospital, five out of eight sweepers were attacked, and almost every one of the native doctors, and attendants, had premonitory symptoms, which were checked by the Cholera pills. In the Central Prison, neither the Patients in Hospital, nor the attendants, suffered more severely than the other prisoners ; though in the Epidemic of 1856 the Hospital sweepers suffered very severely. The native attendants in the European Hospitals did not suffer severely.

The two European Corps, at the same station, in which there was the most marked difference, were Her Majesty's 27th and 52nd Regiments at Gwalior. In the former the mortality exceeded 16 per cent., and if choleraic diarrhoea be included 17·61, per cent. in the latter it was only 3·63 per cent. including both forms of the disease. The former were quartered in single storied buildings on low ground ; the latter on the top of a Rock rising 300 feet above the surface of the country. Both Barracks are new, and similarly constructed, equally clean, and well ventilated, and every attention paid to diet, exercise and cleanliness. The chief difference appears to be that the Corps that suffered most was lodged in low ground and *slept under the line to which miasma is supposed to extend in Tropical climates, whilst the other was above the miasmatic influence.* In this corps the disease appeared, and the individual cases were as virulent but only one man died for five who suffered in the other corps.

At Muttra, all the preliminary arrangements were made, the encamping ground selected, and the preliminary treatment in Barracks adopted, when the disease appeared in Her Majesty 20th Light Dragoons. The period was *tided over without moving* ; there were only 23 cases, of whom 4 proved fatal and there was no fatal case in the Horse Artillery.

At Gwalior the disease became severe on the 25th July, on the 31st Her Majesty's 27th moved into tents close to the Barracks with slight benefit. They then moved into Camp on a high dry ridge 4 miles off on the 8th August with benefit. Here they remained until I arrived on the 16th, when on account of their long halt and of the disease continuing, the camp was changed, to another ridge about 4 miles on the opposite side of cantonments. It was intended that the men should sleep one night in Cantonments, to allow their cots to be transported to the new ground ; but in consequence of the want of carriage they were detained a second night. This was followed by a considerable increase of the attack. The disease however rapidly diminished in the Camp, which was now changed every 3 or 4 days ; but it continued in the Hospital, and amongst the men detained on duty in Cantonments. The mortality amongst those admitted into Hospital was most distressing, out of 211 admissions only 25 had been discharged while 33 remained under treatment on the 20th August. There was some needless delay, in removing the sick from the Hospital, into the Barracks selected for them, which though fumigated and white-washed, "wanted sweeping and some of the Punkah ropes were broken." This was through the remonstrance of Surgeon G. Peacock "who considered the change as premature, and more likely to do harm than good." He also

objected to the preliminary treatment, by the Cholera Pill in Barracks without requiring the men to be taken into Hospital. The mortality in this Corps exceeded 17 per cent. In the Artillery whose Barracks were contiguous, the disease was *tided over* without a move. The preliminary Barrack treatment was assiduously used, they lost 13 from both forms of the disease equal to 4·96 per cent.

The importance of the prophylactic, and preliminary treatment, of this disease, has been more forcibly impressed on my mind, by each successive epidemic attack, that has passed under my observation; more particularly in the severe attacks at Agra in the years 1851, 1856, 1860 and confirmed by what has taken place, in the present attack. *The battle must be fought before collapse supervenes*; after that stage, the power of medicine for good or for evil, is very limited: hence has arisen the vaunted power of opposite remedies. *Reaction is an effort of nature*, analogous to the reaction, that follows the cold stage of ague; in which more extended experience has proved the want of efficacy, if not injury, of employing remedies, apparently called for by present prominent symptoms. These two diseases, cholera and ague, are in some instances combined, more especially in the rainy season; inducing a periodical type in the symptoms of cholera, with intervals of 12 hours; and often commencing between 2 and 3 o'clock in the morning. This formed the peculiar characteristic of the present epidemic, as previously mentioned.

The influence of *trees*, on the origin, or dissemination of cholera, has attracted much attention. In the vicinity of the Barracks, in Cantonments and at the Jail in the Civil Lines, where the disease was most severe at Agra, there were *no trees* whilst the Officers Bungalows were surrounded by gardens and trees and the Officers suffered slightly. A similar remark applies to the Barracks, and Officers' Bungalows, at Morar. The Barracks occupied by the Detachment of the 52nd, in the Fortress of Gwalior, situated at the bare top of the hill, had several cases, as intense though not so numerous, as in the neighbouring Cantonment of Morar. At Meean Meer, where the disease has been *most fatal*, both now, and on former occasions, there are *no trees*. The purifying action of the leaves, during the day, is beneficial, under ordinary circumstances, in removing ammonia, and *fœtid* gases, and supplying oxygen, whilst the carbonic acid, given out during the night, does not prove injurious, where the circulation of the air is free; nor under these circumstances, does it appear to assist the action of the cholera poison.

The Cholera poison appears capable of being disseminated through the air, and of being communicated to the body through the lungs during respiration, and through the skin, by absorption. Its primary action appears to be on the sympathetic nerve, diminishing its power, when *moderate* in degree; and paralising it when *intense*, or when the resistance is feeble from debility or exhaustion. When the system is vigorous it appears capable of digesting, or eliminating the poison, through the organs employed to purify the blood, viz., the liver, kidneys, and lungs. Any cause that diminishes the action of these organs, favours the developement of the disease. The mental power and muscular action, continue unimpaired in the earlier stages of the disease. The involuntary muscles of the intestines continue to act and suffer spasms, like the voluntary muscles, long after the secreting functions, of the sympathetic nerve, have ceased. The feeble action of the heart, though influenced by prostrated nervous energy, is modified by the nature of its contents, viz., the blood. The retention or non-elimination of the impurities of the blood, during collapse, renders it dark, fluid, and non-stimulant to the heart; but even in the most advanced

stages, the transfusion of a *saline solution* into the veins, will restore the action of the heart and the red colour to the blood—though it will not cure disease. When nature fails in digesting or decomposing the poison, her next effort appears to be to throw it off, by purging and vomiting. This *beneficial* character of the symptoms of the disease, is apparently contradicted, by the action of the remedies found most beneficial. During the prevalence of the epidemic a strong purgative, particularly if *saline*, will induce congee stools and collapse: whilst the best remedies check the preliminary diarrhoea; but this does not cure the disease, if the evacuations continue white, and the secretions of the liver and kidneys be not restored. The mere torpor, and paralysis of the muscular coat of the intestines, induced by a narcotic, though it may not *cure* the disease, is *useful* in many cases. By diminishing pain and relieving spasms, it prevents exhaustion, and by giving rest, allows the system to recruit and digest the poison. In those cases where the diarrhoea was caused by indigested food or irritating contents, and when these had been evacuated, no further remedies would be required. This explains the action of the Cholera Pills recommended in the preliminary treatment, in the Barracks, and all out-stations; how far they are to be trusted, and when other assistance is required.

The treatment *during Collapse* should be directed to *assist nature to throw off the disease* by supporting the action of the heart, and restoring the functions of the sympathetic nerve, in promoting the secretions of the liver and kidneys. In some cases from the first, all remedies appear powerless; and many remedies in this stage are merely palliative, if not injurious. The most powerful are *inert until reaction ensues*. This is an effort of nature, often feeble, and flickering, and easily overpowered or diverted into dangerous channels, by the remedies which were previously inert. I have endeavoured to impress on medical officers, that their energies are best employed, in preventing the attack, or treating its earliest stages: that half the energy fruitlessly employed, in resuscitating a collapsed case, might prevent many other cases from advancing, to the same hopeless stage.

Of the individual remedies during collapse, hot saline enemata, frequently repeated are useful in relieving cramps, supporting the pulse and promoting reaction. The periodical type particularly during the rainy season indicates the use of Quinine. The absence of bile in the evacuations indicates the use of Calomel. Soda, or ammonia in small quantities, given in Iced water, was very agreeable, and not injurious. Frictions with Turpentine Liniments, Sinapisms and hot bottles gave relief. *The bed pan must be used in all cases*; as raising the head, and the exertion of sitting up is followed by fatal syncope in severe cases, and by exhaustion which is injurious in all. Chloroform and Chlorodine relieve sickness, and vomiting, with apparent advantage, in the earlier stages; but in severe cases, where reaction followed, there was frequently fever, with dangerous head symptoms. The exhibition of opiates, except in very small doses, is dangerous. The action of Alcoholic stimuli, as Brandy, Champagne, Wine, or Beer is very questionable *during collapse*, and when reaction has taken place, the greatest caution and moderation are required, to prevent injurious effects. The Chlorate of Potash was tried in draughts, and enemata, and by sub cutaneous transfusion, without any apparent beneficial effects. Sulphuric Acid was used extensively, and reported on favorably, by Garrison Surgeon T. S. Lacy: but other Medical Officers did not find it useful. Small bleedings to the extent of 3 or 4 oz. were said to be useful, by Civil Surgeon G. R. Playfair, when the pulse at the wrist was perceptible and the blood would flow; but it could not be got to flow, in very bad cases.

The cessation of vomiting or purging was not always a favorable sign, and when the dark evacuations appeared it was injurious to check them. The diagnosis is unfavorable until the urine flows freely, and the voice is restored, Sound natural sleep is a good sign. Alimentary food in the shape of soup &c., during collapse when the liver and kidneys are not acting, and the function of digestion is suspended, is only useful from the quantity of salt water it contains, the other constituents are likely to prove injurious. When reaction has taken place, it should be given in small quantities, and at short intervals. In some cases when great irritability of stomach remains, the exhibition of nourishing enemata, is highly useful. Irritability of stomach appears to depend, in some instances, on defective secretion of urine, in other cases on inflammation of the stomach, caused by the disease, or the remedies employed. In these cases a small blister to the Epigastrium is useful. In some cases where Diarrhoea continued, oil of turpentine was beneficial.

When reaction takes place, the cure is completed through the action of the liver and kidneys, Calomel combined with a carminative is useful; and small doses of Quinine are very valuable.

Strength is regained by a regulated diet with a small quantity of Wine, or Beer; gentle exercise and change of air. In very severe cases, slight but persistent attacks of aguish fever are frequent, till the advance of the cold season; in these cases change of air into camp is very beneficial. The Troops at Agra have continued very sickly up to this period, with a considerable number of feverish cases in Hospital, and a large convalescent list unfit for duty. It is proposed to move them into camp when the ground gets dry, and the days are a little cooler.

The conduct of the Medical Officers during these trying times deserves the favorable notice of His Excellency the Commander-in-Chief. To me it was most gratifying, to see the earnest zeal with which they did their duty and co-operated in carrying out the arrangements for the comfort, and care of the sick. Particularly the constant kind, care and unwearied zeal of Surgeon Major C. M. Henderson, of the 107th Regiment and Surgeon Major R. Whittall, of the Artillery Division. To the careful treatment and precautionary measures of Surgeon C. L. Cox Her Majesty's 20th Light Dragoons, the small mortality in that Corps may be attributed. Assistant Surgeon A. MacLean, of Her Majesty's 42nd Royal Highlanders, was most zealous and attentive till his health broke down, and he was succeeded by Surgeon J. McMun whose attention and care were praiseworthy. Surgeon J. W. Mountjoy, of the Artillery Division, was indefatigable in his attention, and care of the men in Barracks, and when sick, in Hospital. Assistant Surgeon H. Gogarty, Her Majesty's 52nd Light Infantry, was most zealous and attentive to his duties, Dr. Currie, Superintendent of Vaccination, visited the famine kitchen at Kandowlee, where the Cholera was severe, and had created great alarm. He died from the disease the following day, and Government lost a most intelligent and valuable servant. Assistant Surgeon Stewart, of Bhurtpore, also fell a victim to the disease. On the death of Dr. Currie, I intimated to Doctor W. Walker, Superintendent of the Central Prison, (who was on leave at Mussoorie,) the probability of the cholera appearing in his charge, and he rejoined immediately. But as the disease did not appear and the prisoners continued very healthy, up to the 4th July, he was permitted to return to Mussoorie on very urgent private affairs. He returned, however, as soon as he heard the disease had broken out; and devoted his usual energy and zeal, to the care of the sick. Civil Surgeon G. R. Playfair conducted his duties during his absence, and promptly carried out the recommendations, for the distribution of the prisoners, and zealously laboured in the Hospital. The Native Doctor Kooshiale Ram, was

indefatigable in his attention to the sick. The attention and assiduity of Mr. Apothecary, G. Hart, H. M's 107th Regiment, Mr. Apothecary C. Baker, and Mr. Steward R. S. Quinell, H. M.'s 42nd Royal Highlanders, and Mr. Officiating Apothecary John Sleigh, H. M.'s 27th Regiment, were reported to me as most praiseworthy, I would strongly recommend that these officers, and subordinates, be brought to the favorable notice of His Excellency the Commander-in-Chief.

On the approach of the disease, application was made to the Principal Inspector General of the Medical Department in Calcutta for additional medical aid. One Assistant Surgeon joined the 107th Regiment, the day after the first case appeared in it and one joined the 20th Light Dragoons the evening before the first case appeared. As the disease became intense, further Medical and Subordinate assistance, was procured by Electric Message, as the emergencies arose. They were hard worked, but when well managed their was no deficiency of attendance. The supply of medicines, and Hospital comforts, was abundant.

The suffering and loss of life has been great; but that it has not been greater, is owing to the precautionary measures and to the prompt and energetic manner in which these were carried into effect at Agra by Brigadier Troup, C. B., and at Gwalior by Brigadier Welchman, C. B.

When the attack subsided at Agra, I went to Gwalior where it was very severe.

To the cordial co-operation of Colonel Priestly, Her Majesty's 42nd Royal Highlanders, and of Colonel Baumgartner, Her Majesty's 27th Regiment, in carrying out the sanatory arrangements, I am much indebted. Their anxious care for their men was most valuable. It is desirable that every Officer should be present with his Corps, on an emergency like an attack of Cholera which is more trying, to the British soldiers than farming a forlorn hope.

No reliable information is available, regarding the mortality from the disease, in the adjoining native cities. The opinions are conflicting; on enquiry amongst my native friends at Agra, including the Chief Hukeem Nusseeroodeen, some say there have been 3000 deaths, others a greater number, and that all the wood stored for buring the dead, was soon consumed. The report from the Magistrate and Kotwal does not exceed one-third of the above mentioned number.

In the same manner the reports from the Vakeels, and officials connected with the Residency, and the bankers, and merchants, at Gwalior, varied from 1,200 to 3,000. The most remarkable circumstanoe was the total absence of the disease in the three *native Corps*, and Camel Corps, at Morar, (the Cantonment of Gwalior) when the *European Troops* suffered so severely, and when the mortality was so great six miles off amongst the *Rajah's Troops*, or the inhabitants of the Lushkur, and City of Gwalior.

The accompanying tables Nos. 1, 2, 3 and 4, show the daily admissions and deaths from Cholera and Diarrhoea during the months of June, July, August, and September, with the fall of rain and range of the Thermometer.

Tables Nos. 5, 6 and 7 show the admissions and deaths, in each European Corps, at Agrn, Gwalior, and Muttra; with the proportion of deaths to strength and admissions; and the dates of the first and last cases.

Table No. 8, is a similar return amongst the native troops, prisoners, and in the Thomason Hospital, where the sick from the famine kitchens at Shagunge, and the City of Agra, were treated. The numbers daily attending the famine kitchen averaged 2,000, the people employed in charitable work, whose sick were also sent to the Thomason Hospital, varied in number. I have placed the whole strength at 3,000.

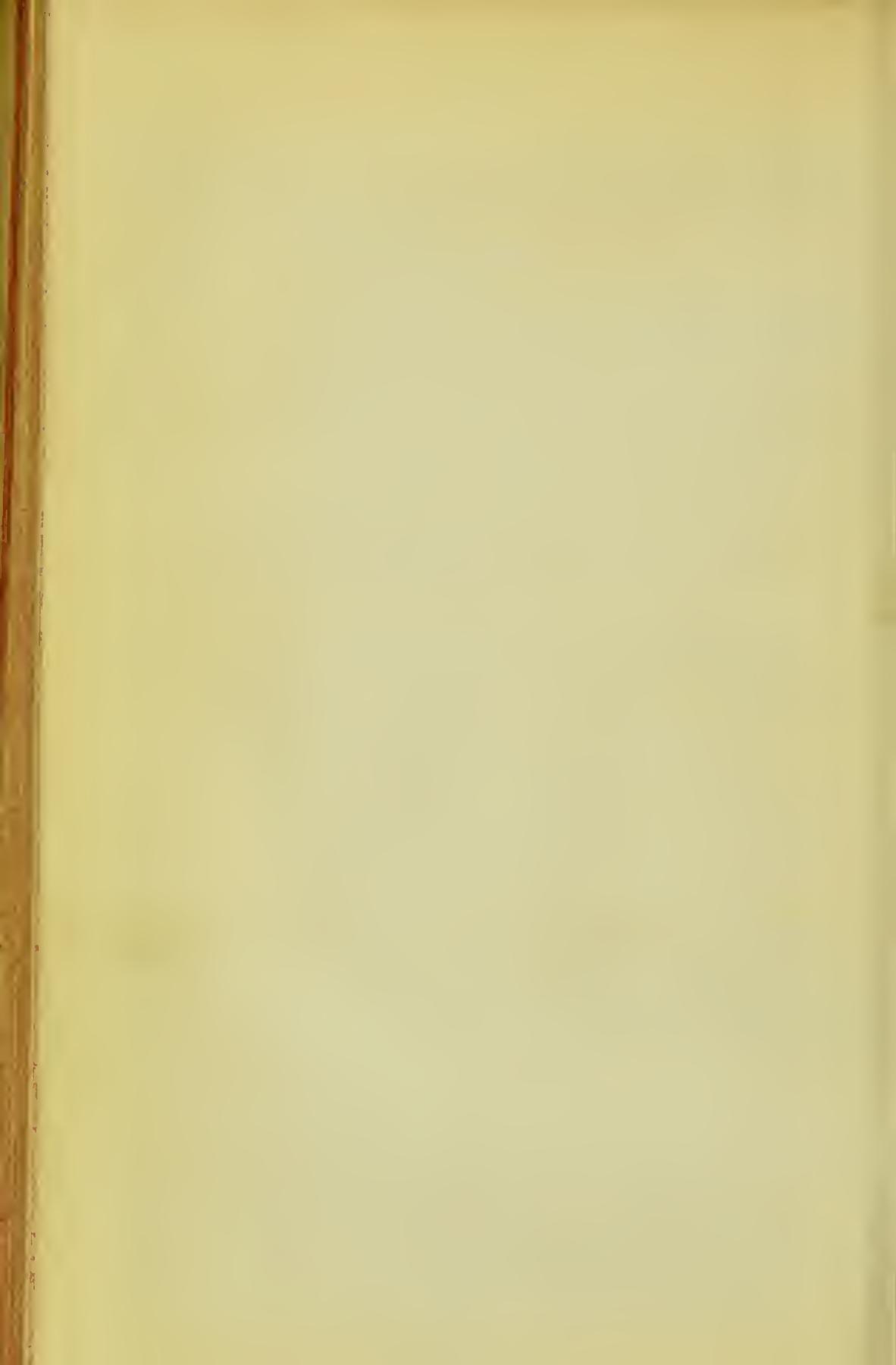
Table No. 9, shows the total admission and deaths amongst the Europeans and Natives:

Table No. 10, is a comparative table showing the relative admission and deaths from Cholera and Diarrhoea amongst the Europeans and Natives during the two attacks of Epidemic Cholera in the years 1860 and 1861.

JOHN MURRAY, M. D.,
Deputy Inspector General of Hospitals.

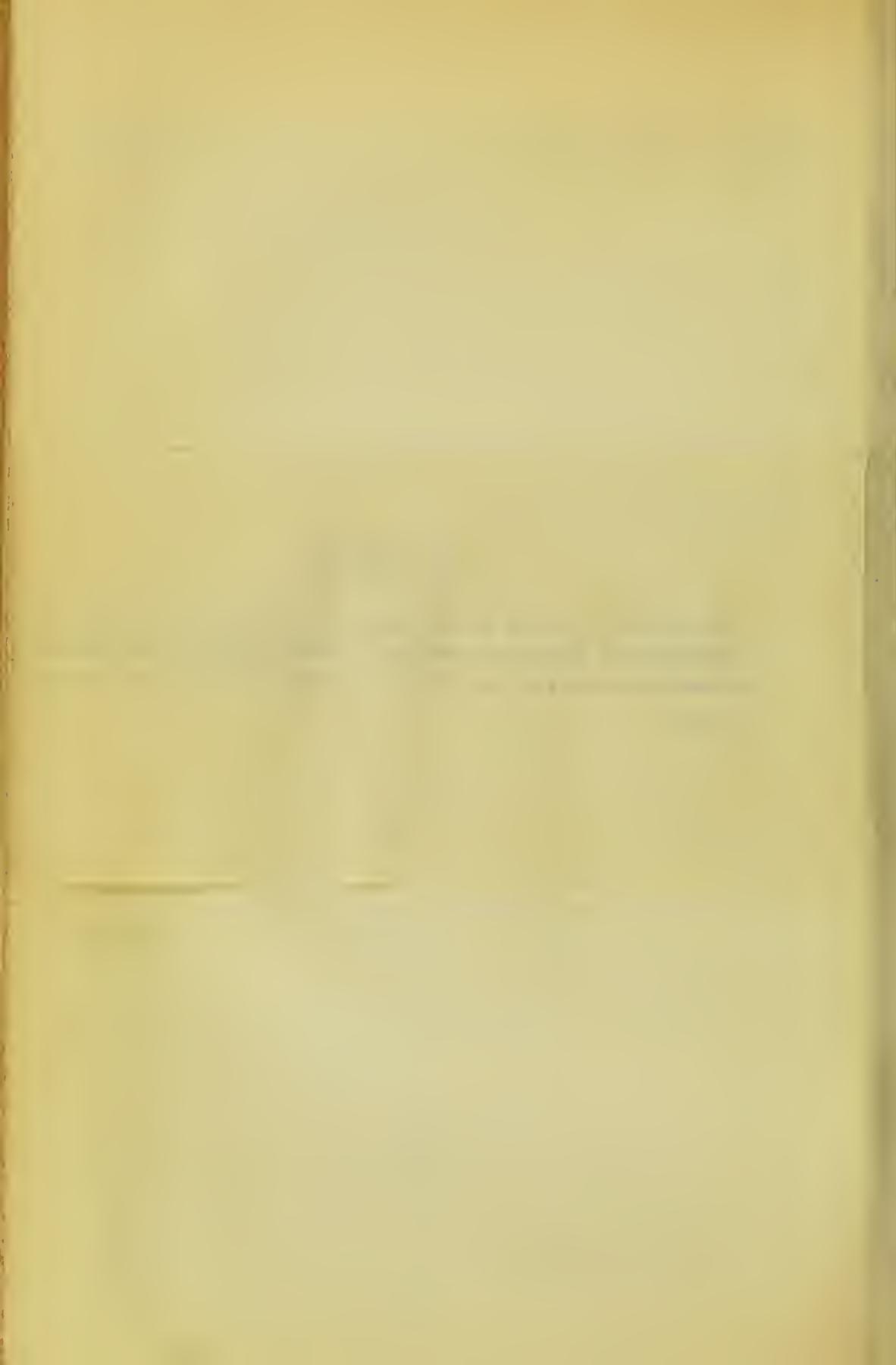
Agra.

Agra, 1st October 1861.



M E M O :

TABLE No. 11, shows the admissions and deaths from cholera and diarrhoea at the station of Agra, on all occasions in which the disease has assumed an epidemic form since the year 1831. (The years 1837 and 1838 were famine years.)



- V. -

Table of Daily Admissions and Deaths from Small-pox and Dianhwa amongst the Thomason Hospital at Agra during
the Month of June 1861.-

$$e^{-\frac{V_0}{kT}}$$

Agra 1st October 1867

Memo. - There were 3 admissions from cholera in the 42nd Highlanders on the 21st, 28th and 29th June and 2 deaths on the 21st and 28th not recorded in this Table. -

(Signed) John Murray M. D.
Deputy Inspector General
of Hospitals Agra Circle.

Table of daily Abortions and Deaths from Cholera and Diarrhea amongst the European Troops at Agira, Giarre and Motta,
and amongst the natives in 2^d Regt. Native Infantry, the Central Prison and Thomason Hospital at Agira, during the month of July
1861. Agira 1st October 1861.

Agra 1st October 1861

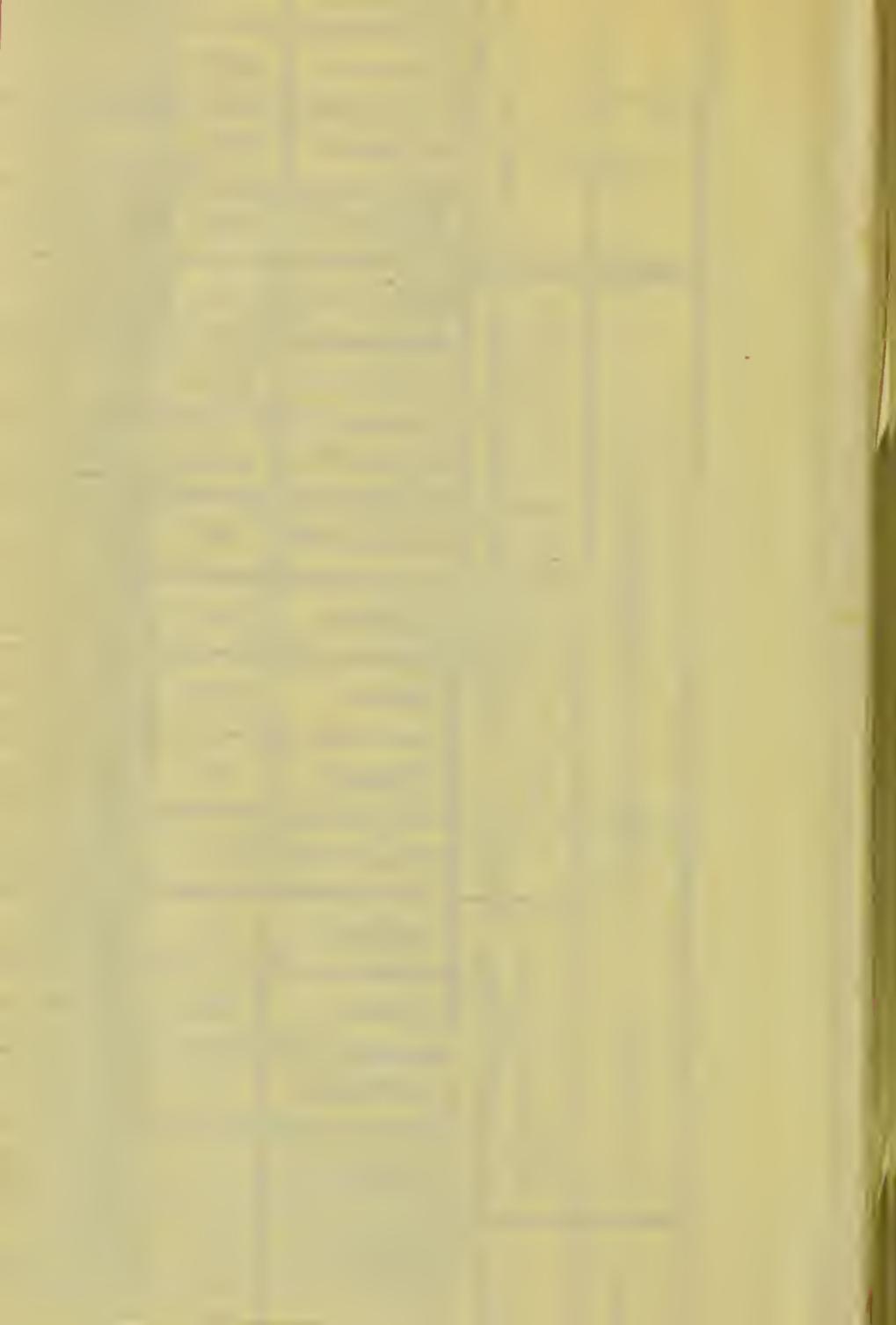
(Signed) John Murray, M. D.
Surgeon, Funeral

Table of daily Admissions and Deaths from Cholera and Dysentery amongst the European Troops at Agra, Gwalior and Multan; and amongst
A. M. 12th P. I. the British Queen and Thessaloniki Hospitals at Agra, during the month of August 1861.

Agra 1st October 1861.

(Signed) John Murray M.D.

Deputy Inspector General of



A.O.L.

Table of Daily Admissions and Deaths from Cholera and Diarrhoea amongst the H. M's 27th Regiment at Gwalior, during the month
of September 1861.

Agra 1st October 1861.

(Signed) John Murray M. D.

Deputy Inspector General
of Hospitals Agra Circle.

N. S.

Table of Daily Admissions
and Deaths from Cholera and
Diarrhoea amongst the H. M.
27th Regiment at Garrison
Admiral St. or 100.

Table of Admissions and Deaths from Cholera and Diarrhoea in the European Corps at Agra, Gwalior and Muttra, and in the Native Corps, Central Prison and Thomason Hospital at Agra, during the Year 1861.

Corps.	European Agra.				European Gwalior.				European Muttra				Native Agra.				Total	Total	Grand	
	Artillery	H.M. Regt.	H.M. Regt.	Artillery	H.M. Regt.	H.M. Regt.	3/3 P.	H.M. Regt.	42 nd Regt.	Central	Thomason	European	Native	European	Total	Total	Total			
	Division	Highly Agra.	Agra.	Regiment	Division	Regiment	Regiment	Div.	Light Dr.	92 I.	Prison	Hospital	European	Native	Total	Total	Total			
Date / 61	Born and Sex.	Diseases	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died		
June		Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
		Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
	Officers	Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
		Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
	Men.	Cholera.	"	"	3	2	"	"	"	"	"	"	"	"	33	18	3	33	18	
		Diarrhoea.	"	"	1	"	"	"	"	"	"	"	"	"	29	4	1	27	4	
	Women	Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	7	7	"	7	7	
		Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	6	1	"	6	1	
	Children	Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	60	33	"	60	33	
		Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	71	5	0	71	5	
July		Cholera.	1	1	1	1	"	"	"	"	"	"	"	"	3	2	"	3	2	
		Diarrhoea.	"	"	2	"	"	"	"	"	"	"	"	"	6	"	"	6	"	
	Officers	Cholera.	0	3	47	31	42	29	3	9	33	37	1	9	"	10	3	12	3	
		Diarrhoea.	4	"	72	"	66	"	"	17	"	"	12	"	17	"	3	36	1	
	Men.	Cholera.	"	"	3	"	4	0	"	7	3	2	1	"	1	"	15	3	3	
		Diarrhoea.	"	"	5	"	"	"	"	4	1	"	"	"	6	"	10	"	4	
	Women	Cholera.	"	"	2	"	3	1	9	16	13	"	"	"	5	6	2	17	5	
		Diarrhoea.	"	"	2	0	4	"	"	7	1	3	1	"	1	"	17	3	3	
	Children	Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	79	"	17	3	19	
		Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	17	3	19	"	36	
August		Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
	Officers	Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
	Men.	Cholera.	"	"	3	6	6	3	9	7	134	107	7	6	"	8	1	99	5	21
		Diarrhoea.	8	"	20	1	16	"	"	116	4	16	"	5	"	2	"	40	"	9
	Women	Cholera.	"	"	"	"	"	"	1	1	11	7	"	"	"	9	"	109	5	49
		Diarrhoea.	"	"	"	"	"	"	"	19	"	1	"	"	1	"	13	8	1	14
	Children	Cholera.	2	"	"	"	"	"	3	3	12	12	2	2	"	9	"	5	2	20
		Diarrhoea.	"	"	1	"	3	"	"	6	2	2	"	"	1	"	15	2	13	2
	Officers	Cholera.	"	"	"	"	"	"	"	2	2	"	"	"	2	"	2	2	2	
		Diarrhoea.	"	"	"	"	"	"	"	2	"	"	"	"	1	"	1	"	"	
	Men.	Cholera.	"	"	"	"	"	"	"	20	16	"	"	"	20	"	14	"	20	14
		Diarrhoea.	"	"	"	"	"	"	"	3	5	"	"	"	33	5	"	"	33	5
	Women	Cholera.	"	"	"	"	"	"	"	"	4	2	"	"	"	2	"	2	"	2
		Diarrhoea.	"	"	"	"	"	"	"	2	"	"	"	"	2	"	2	"	2	
	Children	Cholera.	"	"	"	"	"	"	"	4	5	"	"	"	4	"	5	"	4	
		Diarrhoea.	"	"	"	"	"	"	"	2	2	"	"	"	4	"	5	"	4	
	Officers	Cholera.	1	1	1	1	"	"	"	2	2	"	"	"	1	"	4	"	5	
		Diarrhoea.	"	"	2	"	"	"	"	2	"	"	"	"	4	"	6	"	6	
	Men.	Cholera.	0	3	53	39	40	24	12	0	207	150	8	7	"	10	4	12	5	173
		Diarrhoea.	12	"	92	1	62	"	"	166	9	15	"	17	"	5	1	76	1	63
	Women	Cholera.	"	"	3	"	4	3	1	20	10	2	1	"	2	"	16	3	20	
		Diarrhoea.	"	"	5	"	"	"	"	22	"	"	"	"	7	"	5	7	23	
	Children	Cholera.	2	"	"	3	3	4	4	30	27	2	2	"	2	"	10	47	37	
		Diarrhoea.	"	"	4	1	7	"	"	17	0	5	1	"	2	"	105	7	105	
	Officers	Cholera.	11	5	57	40	55	30	17	13	259	197	12	10	"	23	4	12	5	709
		Diarrhoea.	12	"	103	2	69	"	"	200	17	22	8	17	"	26	3	81	1	170
	Men.	Cholera.	5	23	16	7	27	5	3	22	4	1	1	3	102	5	170			
		Diarrhoea.	106	649	396	203	955	264	106	245	565	2865	1500	2924	4930	7056				
	Women	Cholera.	15	33	33	25	80	14	5	21	"	94	1000	226	1094	1320				
		Diarrhoea.	28	38	44	27	157	20	6	37	"	500	357	500	357					
	Total Strength.		154	743	489	262	1293	303	120	319	569	2960	3003	3603	6532	90135				
	Grand Total	Strength	3.26	5.301	6.15	4.96	16.24	3.30	"	1.25	0.87	2.13	3.79	8.29	2.82	4.77				
	Admitted	Cholera.	0.27	0.27	"	"	1.40	0.33	"	"	0.03	0.63	0.55	0.27	0.33					
		Diarrhoea.	45.45	70.77	56.54	76.47	76.06	83.33	"	17.39	47.66	56.92	58.16	68.87	46.60	58.24				
		Cholera.	"	9.94	"	"	8.50	4.54	"	"	1.23	7.42	6.65	5.40	4.80					

Memo: There are 3 admissions from cholera. - The 42nd Highlanders on the 21st, 28th and 29th June and 2 deaths on the 21st & 28th. not recorded in Table 9281.

(Signed) John Murray M.D.

Deputy Inspector-General of Hospitals

Agra Circle.

Table of Admissions and Deaths from Cholera and Diarrhoea amongst
the European Troops at the Station of Agra during 1861.

	Corps	Strength	Diseases	Admitted	Deaths	Strength	Ratio P. C. deaths to.	Admission.	Barack	Hospital	Camp	Admitted from	Date	Compt.		
													1st Base.	2nd Base	Month into	Retained from
Officers	5		Cholera.	1	1	20.00	100.00	1	"	"	"	"	29 th July			
			Diarrhoea.	"	"	"	"	"	"	"	"	"				
Men	106		Cholera.	0	3	2.73	47.50	0	"	"	"	"	17 th July 31 st July	"	"	
			Diarrhoea.	12	"	"	"	12	"	"	"	"	28 th July 27 th Aug	"	"	
Women	15		Cholera.	"	"	"	"	"	"	"	"	"				
			Diarrhoea.	"	"	"	"	"	"	"	"	"				
Children	28		Cholera.	2	1	8.59	50.00	2	"	"	"	"	3 rd Aug 16 th Aug	"	"	
			Diarrhoea.	"	"	"	"	"	"	"	"	"				
Officers	23		Cholera.	1	1	4.35	100.00	1	"	"	"	"	27 th July	27 th July 15 th Aug		
			Diarrhoea.	2	"	"	"	2	"	"	"	"	17 th July 28 th July	"	"	
Men	649		Cholera.	53	39	6.01	73.58	27	14	12	27 th June 3 rd Aug	"	"			
			Diarrhoea.	92	1	0.15	1.09	80	"	12	6 th July 31 st Aug	"	"			
Women	33		Cholera.	3	"	"	"	3	"	"	"	"	15 th July 27 th July	"	"	
			Diarrhoea.	5	"	"	"	5	"	"	"	"	12 th July 23 rd July	"	"	
Children	38		Cholera.	"	"	"	"	"	"	"	"	"				
			Diarrhoea.	14	1	2.63	25.00	4	"	"	"	"	10 th July 7 th Aug	"	"	
Officers	16		Cholera.	"	"	"	"	"	"	"	"	"				
			Diarrhoea.	"	"	"	"	"	"	"	"	"				
Men	396		Cholera.	48	24	6.06	50.00	39	4	5	7 th July 28 th June 27 th July 10 th Aug					
			Diarrhoea.	62	"	"	"	59	"	3	2 nd July 12 th Aug	"	"			
Women	33		Cholera.	4	3	9.09	75.00	4	"	"	21 st July 31 st July	"	"			
			Diarrhoea.	"	"	"	"	"	"	"	"	"				
Children	44		Cholera.	3	3	6.82	100.00	3	"	"	24 th July 26 th July	"	"			
			Diarrhoea.	7	"	"	"	7	"	"	13 th July 6 th Aug	"	"			
Officers	44		Cholera.	2	2	14.54	100.00	2	"	"	19 th July					
			Diarrhoea.	2	"	"	"	2	"	"	17 th July 25 th July	"	"			
Men	1149		Cholera.	109	66	5.14	60.55	74	18	17	22 nd July 16 th Aug					
			Diarrhoea.	166	1	5.08	0.60	157	"	15	2 nd July 31 st Aug	"	"			
Women	81		Cholera.	7	3	3.70	42.85	7	"	"	15 th July 31 st July	"	"			
			Diarrhoea.	5	"	"	"	5	"	"	12 th July 25 th July	"	"			
Children	110		Cholera.	5	4	3.63	80.00	5	"	"	21 st July 6 th Aug	"	"			
			Diarrhoea.	11	1	0.91	90.90	11	"	"	10 th July 7 th Aug	"	"			
Grand Total	1384		Cholera.	123	75	5.62	60.48	88	18	17	25 th June 14 th Aug					
			Diarrhoea.	184	2	0.15	100	169	"	15	2 nd July 31 st Aug	"	"			

(Sd) John Murray, M.D.

Deputy Inspector-General
of Hospital Agra Circle.

Table of Admissions and Deaths from Cholera and Diarrhoea
at the European Troops at the Station of Gwalior during
1861.

	Corps.	Sex.	Strength.	Disease.	Admitted.	Deaths.	Ratio of Deaths to Admissions.		Admitted from	Date of	Last Case.	Moved into.	Camp.
							Strength.	Admissions.					
54	July Division.	Officers.	7	Cholera.	"	"	"	"	"	"	"	"	"
				Diarrhoea.	"	"	"	"	"	"	"	"	"
55	Men.	203	Cholera	12	8	3.98	66.66	10	2	"	29 th July	23 rd Augt	"
				Diarrhoea.	"	"	"	"	"	"	"	"	"
56	Women.	25	Cholera	1	1	3.88	100.00	"	1	"	10 th Augt	11 th Augt	"
				Diarrhoea.	"	"	"	"	"	"	"	"	"
57	Children.	27	Cholera.	4	4	14.89	100.00	2	2	"	24 th July	26 th Augt	"
				Diarrhoea.	"	"	"	"	"	"	"	"	"
58	July 27 th Regt.	Officers	21	Cholera.	2	2	9.52	100.00	2	"	9 th Sept	10 th Sept	"
				Diarrhoea.	"	"	"	"	"	"	"	"	"
59	Men.	554 455	Cholera.	207	148	16.74	73.34	108	18	81	25 th July	10 th Sept	30 th July
				Diarrhoea.	166	9	0.94	5.62	109	"	57	22 nd July	25 th Sept
60	Women.	80	Cholera.	20	10	12.50	50.00	20	"	"	23 rd July	8 th Sept	26 th Augt
				Diarrhoea.	17	"	"	"	17	"	"	27 th July	6 th Sept	3^{rd} Sept
61	Children.	158	Cholera.	30	27	17.19	90.00	30	"	"	22 nd July	9 th Sept	"
				Diarrhoea.	17	8	3.88	52.54	17	"	"	22 nd July	6 th Sept
62	Delach of 14 Mys 52 nd Regt.	Officers.	5	Cholera.	"	"	"	"	"	"	"	"	"
				Diarrhoea.	"	"	"	"	"	"	"	"	"
63	Men.	264	Cholera.	8	7	2.77	87.50	6	2	"	25 th July	22 nd Aug	90.0
				Diarrhoea.	15	"	"	"	15	"	"	31 st July	26 th Aug
64	Women.	14	Cholera.	2	1	7.14	50.00	2	"	"	27 th July	20 th Aug	"
				Diarrhoea.	2	"	"	"	2	"	"	26 th July	10 th Aug
65	Children.	20	Cholera.	2	2	10.00	100.00	2	"	"	3 rd Aug	17 th Aug	"
				Diarrhoea.	5	1	5.00	20.00	5	"	"	25 th July	10 th Aug
66	Officers	33	Cholera.	2	2	60.00	100.00	2	"	"	9 th Sept	10 th Sept	"
				Diarrhoea.	"	"	"	"	"	"	"	"	"
67	Men.	135/ 1422	Cholera.	227	172	9.02	75.76	124	22	81	25 th July	11 th Sept	"
				Diarrhoea.	181	9	0.63	5.11	124	"	57	22 nd July	25 th Sept
68	Women.	119	Cholera.	23	12	10.00	56.36	22	1	"	23 rd July	8 th Sept	"
				Diarrhoea.	20	"	"	"	20	"	"	28 th July	6 th Sept
69	Children.	175	Cholera.	36	33	18.96	97.66	30	2	"	22 nd July	9 th Sept	"
				Diarrhoea.	22	9	4.02	36.86	22	"	"	23 rd July	20 th Sept
70	Grand Total.		Cholera.	288	220	12.59	32.45	182	25	81	22 nd July	11 th Sept	"
				Diarrhoea.	223	10	1.03	3.07	166	"	57	22 nd July	25 th Sept

(Sd) John Murray M. D.
Deputy Inspector General
of Hospitals & Surgeons.

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Table of Admissions and Deaths from Cholera and Diarrhea
amongst the European Troops at the Station of Gwalior during
1861.

Artl. Division.	Corps.	Sex.	Strength.	Diseases.	Admitted.	Deaths.	Ratio P.C. Deaths to Admissions.	Admitted from	Date of	Camp.											
										Strength.	Admissions.	Barack.	Hospital.	Camp.	1 st Case.	Last Case.	Moved into.	Returned from			
84	Officers.	7		Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
				Diarrhea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
58	Men.	203		Cholera.	12	8	3.98	66.66	10	2	"	20 th July	27 th Aug ^t	"	"	"	"	"	"		
				Diarrhea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
51	Women.	25		Cholera.	1	1	3.08	100.00	"	1	"	10 th Aug ^t	18 th Aug ^t	"	"	"	"	"	"	"	
				Diarrhea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
55	Children.	27		Cholera.	4	4	14.00	100.00	2	2	"	24 th July	26 th Aug ^t	"	"	"	"	"	"	"	
				Diarrhea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
75	Officers	21		Cholera.	2	2	9.52	100.00	2	"	"	4 th Sept ^t	14 th Sept ^t	"	"	"	"	"	"	"	
				Diarrhea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
118	Men.	55 ^f 455		Cholera.	207	148	16.74	72.56	103	10	81	25 th July	10 th Sept ^t	31 st July	"	"	"	"	"	16.74	
				Diarrhea.	166	9	0.94	5.42	104	"	57	22 nd July	25 th Sept ^t	"	"	"	"	"	"	11.50	
120	Women.	80		Cholera.	20	10	12.50	50.00	20	"	"	23 rd July	8 th Sept ^t	26 th Aug ^t	"	"	"	"	"	"	"
				Diarrhea.	17	"	"	"	17	"	"	27 th July	6 th Sept ^t	3 rd Sept ^t	"	"	"	"	"	"	"
153	Children.	153		Cholera.	30	27	17.19	60.00	30	"	"	22 nd July	4 th Sept ^t	"	"	"	"	"	"	"	
				Diarrhea.	17	8	3.82	52.52	17	"	"	22 nd July	6 th Sept ^t	"	"	"	"	"	"	"	
14	Officers.	5		Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
				Diarrhea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
14	Men.	264		Cholera.	8	7	2.72	87.58	6	2	"	25 th July	22 nd Aug ^t	92 nd	"	"	"	"	"	"	"
				Diarrhea.	15	"	"	"	15	"	"	31 st July	26 th Aug ^t	"	"	"	"	"	"	"	
14	Women.	14		Cholera.	2	1	7.14	50.00	2	"	"	27 th July	28 th July	"	"	"	"	"	"	"	
				Diarrhea.	2	"	"	"	2	"	"	26 th July	10 th Aug ^t	"	"	"	"	"	"	"	
20	Children.	20		Cholera.	2	2	10.00	100.00	2	"	"	3 rd Aug ^t	17 th Aug ^t	"	"	"	"	"	"	"	
				Diarrhea.	5	1	5.00	20.00	5	"	"	25 th July	10 th Aug ^t	"	"	"	"	"	"	"	
33	Officers	33		Cholera.	2	2	60.00	100.00	2	"	"	9 th Sept ^t	10 th Sept ^t	"	"	"	"	"	"	"	
				Diarrhea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
1351	Men.	1422		Cholera.	227	173	9.02	75.76	124	22	81	25 th July	11 th Sept ^t	"	"	"	"	"	"	"	
				Diarrhea.	187	9	0.63	5.11	124	"	57	22 nd July	25 th Sept ^t	"	"	"	"	"	"	"	
119	Women.	119		Cholera.	23	12	10.00	56.36	22	1	"	23 rd July	8 th Sept ^t	"	"	"	"	"	"	"	
				Diarrhea.	20	"	"	"	20	"	"	26 th July	6 th Sept ^t	"	"	"	"	"	"	"	
175	Children.	175		Cholera.	36	33	18.96	97.66	34	2	"	22 nd July	9 th Sept ^t	"	"	"	"	"	"	"	
				Diarrhea.	22	9	4.02	36.06	22	"	"	23 rd July	20 th Sept ^t	"	"	"	"	"	"	"	
1678	Grand Total.	1748		Cholera.	288	220	12.59	72.64	182	25	81	22 nd July	11 th Sept ^t	"	"	"	"	"	"	210	
				Diarrhea.	223	18	7.03	8.07	166	"	57	22 nd July	25 th Sept ^t	"	"	"	"	"	"	12.53	
75																				72.92	

(Sd) John Murray M. D.
Deputy Inspector General
of Hospitals, Army Circle.

Table of Admissions and Deaths from Cholera and Diarrhoea amongst the Native Troops at the Station of Agra, during 1861.-

Date.	Troops.	Sex.	Strength	Diseases.	Admitted.	Deaths.	Ratio P.C. Deaths to Admission	Admitted from:	Hospital.	Camp.	Moved into		Camp.	Retired from		
											Strength.	Barack.	Hospital.	Camp.	1st Case.	Last Case.
12 th Regiment No. 2 Gard.	Officers.	4.		Cholera.	"	"									"	"
				Diarrhoea.	"	"									"	"
Men. 565		Cholera.	12	5	0.80	47.66	12	"	"	"					"	"
				Diarrhoea.	3	"	"	3	"	"					"	"
Women		Cholera.	"	"											"	"
				Diarrhoea.	"	"									"	"
Children		Cholera.	"	"											"	"
				Diarrhoea.	"	"									"	"
Officers.	9			Cholera.	"	"									"	"
				Diarrhoea.	"	"									"	"
Men. 2065		Cholera.	173	63	2.20	36.47	162	5	6						"	"
				Diarrhoea.	76	1	0.03	4.40	75	"	7				"	"
Women	94		Cholera.	16	3	3.89	18.75	16	"	"					"	"
				Diarrhoea.	5	"	"	5	"	"					"	"
Total	2959			Cholera.	189	66	2.23	34.92	178	5	6				364	Yoopuk
				Diarrhoea.	81	1	0.03	1.24	80	"	1				289	Secunderab.
Officers.	3			Cholera.	"	"	"	"	"	"					"	"
				Diarrhoea.	"	"	"	"	"	"					"	"
Men. 1500		Cholera.	106	58	5.66	52.77	43	20	43						"	"
				Diarrhoea.	63	4	0.26	6.25	27	"	36				"	"
Women	1000		Cholera.	20	15	1.50	75.00	6	"	14					"	"
				Diarrhoea.	7	2	0.20	28.57	4	"	3				"	"
Children	500			Cholera.	70	47	8.20	58.57	45	"	25				"	"
				Diarrhoea.	105	7	1.60	6.66	37	"	74				"	"
Officers.	8			Cholera.	"	"	"	"	"	"					"	"
				Diarrhoea.	"	"	"	"	"	"					"	"
Men. 14930		Cholera.	291	126	2.57	43.66	217	25	49						"	"
				Diarrhoea.	142	5	0.10	3.52	105	"	37				"	"
Women	1094		Cholera.	36	18	1.64	50.00	22	"	14					"	"
				Diarrhoea.	12	2	0.18	17.66	9	"	3				"	"
Children	300			Cholera.	70	47	8.80	55.57	35	"	25				"	"
				Diarrhoea.	105	7	14.50	6.66	37	"	74				"	"
Total.	6532			Cholera.	397	185	2.03	46.34	274	25	98				"	"
				Diarrhoea.	259	16	0.21	5.40	145	"	124				"	"
Grand Total	6532			Cholera &	656	199	3.04	30.48	479	25	212				"	"

(Signed) John Murray,

Duly Inspector-General of
Hospitals Agra Circle.



Statistical Table of admissions and deaths among the European Troops and Native Troops, and Prisoners at Agra, Gwalior and Muttra. During the two attacks of Epidemic Cholera in the years 1860, and 1861.-

Agra 1st October 1861..

Station.	Year.	Corps.	Strength.	Disease:-	Admitted.	Died.	Ratio P.C. Deaths to.		Date of		
							Strength.	Admission.	First Case.	Last Case.	
Agra	1860	Artillery.	178	Cholera.	23	4	3.89	30.53	Augt 16 th	Sept 1 st	
				Diarrhoea.	44	"	"	"	Augt 9 th	Sept 7 th	
		H.M. 3 rd B.R. Regt	1060	Cholera.	82	52	4.90	63.43	Augt 9 th	Sept 17 th	
				Diarrhoea.	694	"	"	"	Augt 9 th	Sept 29 th	
		Natives Central Prison.	1997	Cholera.	816	175	8.67	21.44	Augt 10 th	Sept 18 th	
				Diarrhoea.	203	3	0.15	1.42	Augt 9 th	Sept 30 th	
		Natives Agra Levy and Alice Battalion.	8419	Cholera	47	10	1.26	30.30	Augt 12 th	Augt 31 st	
				Diarrhoea	13	"	"	"	Augt 6 th	Augt 31 st	
		Artillery	154	Cholera.	11	5	3.24	45.45	July 17 th	Augt 6 th	
				Diarrhoea.	12	"	"	"	July 2 nd	Augt 2 nd	
	1861	H.M. 42 nd Regt	743	Cholera.	57	40	5.38	70.17	July 14 th	Augt 8 th	
				Diarrhoea.	103	2	0.27	1.44	July 1 st	Augt 2 nd	
		H.M. 107 th Regt	489	Cholera.	55	30	6.15	54.54	July 1 st	Augt 16 th	
				Diarrhoea.	69	"	"	"	July 2 nd	Augt 31 st	
		Natives Central Prison.	2960	Cholera.	104	66	2.23	34.92	July 6 th	Augt 18 th	
				Diarrhoea.	81	1	0.03	1.23	July 1 st	Augt 30 th	
		Natives 42 nd Regiment & Thomasen Hospital.	3572	Cholera.	200	119	3.33	57.27	June 21 st	Augt 18 th	
				Diarrhoea.	178	13	0.36	7.30	June 9 th	Augt 23 rd	
		Artillery.	166	Cholera.	20	14	0.53	70.00	Augt 9 th	Sept 16 th	
				Diarrhoea.	37	"	"	"	Augt 3 rd	Sept 16 th	
Gunder	1860	H.M. 71 st Regt	775	Cholera.	139	71	9.16	51.07	July 22 nd	Sept 7 th	
				Diarrhoea.	222	3	0.38	1.35	July 25 th	Sept 11 th	
		Artillery.	262	Cholera.	17	15	4.96	76.47	July 29 th	August 21 st	
				Diarrhoea.	"	"	"	"	"	"	
		H.M. 27 th Regt	1213	Cholera.	259	197	16.24	76.06	July 22 nd	Sept 10 th	
				Diarrhoea.	200	17	1.40	8.50	July 22 nd	Sept 13 th	
	1861	Detach't H.M. 52 nd Regt	303	Cholera.	12	10	3.30	83.33	July 25 th	Augt 22 nd	
				Diarrhoea.	22	1	0.33	4.54	July 13 th	Augt 1 st	
		Artillery.	120	Cholera.	19	12	7.3.43	63.16	Augt 73 rd	Augt 25 th	
Muttra	1860	H.M. 2 nd Lt Dm	278	Cholera.	31	12	4.30	38.71	Augt 11 th	Sept 12 th	
				Diarrhoea.	12	"	"	"	Augt 12 th	Sept 22 nd	
		Artillery.	84	Cholera.	"	"	"	"	July 5 th	August 27 th	
				Diarrhoea.	12	"	"	"	"	"	
		H.M. 2 nd Lt Dm	319	Cholera.	23	4	1.25	17.39	July 16 th	Augt 9 th	
				Diarrhoea.	26	"	"	"	July 10 th	Augt 10 th	
	1861	Artillery.	120	Cholera.	"	"	"	"	July 5 th	August 27 th	
				Diarrhoea.	17	"	"	"	"	"	
		H.M. 20 th Lt Dm	319	Cholera.	23	4	1.25	17.39	July 16 th	Augt 9 th	
				Diarrhoea.	26	"	"	"	July 10 th	Augt 10 th	
Total.	1860	Europeans	2545	Cholera.	327	168	6.60	53.37	July 22 nd	Sept 17 th	
				Diarrhoea.	1013	3	0.13	0.29	July 25 th	Sept 29 th	
Total.	1861	Natives	3416	Cholera.	862	193	5.65	22.36	Augt 10 th	Sept 18 th	
				Diarrhoea.	276	3	0.08	1.39	Augt 1 st	Sept 30 th	
Total.	1861	Europeans.	13603	Cholera.	434	299	8.29	60.87	July 7 th	Sept 10 th	
				Diarrhoea.	1449	20	0.55	1.45	July 1 st	Sept 13 th	
Total.		Natives.	6532	Cholera.	397	105	2.82	46.60	June 17 th	Augt 31 st	
				Diarrhoea.	259	14	0.27	5.40	June 9 th	Augt 31 st	
Total.	Europeans.	6148	Cholera.	761	467	7.59	61.35	July 7 th	Sept 17 th		
			Diarrhoea.	1475	23	0.37	1.56	July 1 st	Sept 29 th		
Total.	Natives.	9948	Cholera.	1259	370	3.77	29.70	June 11 th	Sept 18 th		
			Diarrhoea.	475	17	0.17	3.58	June 9 th	Sept 31 st		
Grand Total Europeans and Natives for 1860, 1861.-			Cholera.	2020	845	5.25	41.83	June 19 th	Sept 17 th		
			Diarrhoea.	1950	40	0.24	2.05	June 9 th	Sept 29 th		

(Signed) John Murray M. D.
Deputy Inspector-General



No. 11

Comparative Table of Admissions and Deaths from Cholera and Diarrhoea in the European and Native Troops and Prisoners at Agra in the Years 1837 - 38 - 43 - 51 - 56 - 60 - 61. -

Agra 1st November 1861. -

Year.	Corps.	Strength.	Diseases.	Admitted.	Died.	Date of		Ratio Per cent Deaths to... Strength Admissions.	
						First Case.	Last Case.		
1837.	Artillery -	208	Cholera	7	5	October.	November.	2.14.	77.43
			Diarrhoea.	32	0	"	"	"	"
	European Regiment.	767	Cholera.	4	2	October.	November.	0.26	50.00
			Diarrhoea.	7	1	"	"	0.13	14.28
	Artillery Native 4 Native Corps.	3092	Cholera.	10	2	October.	November.	0.07	20.00
1838.	4 Native Corps.	62	Diarrhoea.	-	1	-	-	0.03	2.38
	Jail.	"	Cholera.	"	"	"	"	"	"
			Diarrhoea.	"	"	"	"	"	"
	Artillery.	196	Cholera.	1	1	July.	July.	0.00	0.00
			Diarrhoea.	4	0	"	"	"	"
1843.	European Regiment.	687	Cholera.	9	5	March.	May.	0.74	55.55
			Diarrhoea.	17	0	"	"	"	"
	4 Native Corps.	3099	Cholera.	104	62	March.	July.	7.35	45.61
			Diarrhoea.	254	3	"	"	0.09	7.29
	Jail.	1318	Cholera.	125	71	March.	July.	5.38	56.00
1847.			Diarrhoea.	399	167	"	"	9.35	31.83
	Artillery.	173	Cholera.	11	5	Augt.	September	2.89	45.45
			Diarrhoea.	1	"	"	"	"	"
	H. M ^s 39 th Regiment	1003	Cholera.	129	49	Augt.	September	4.88	38.00
			Diarrhoea.	82	"	"	"	"	"
1851.	4 N. I. Regiment.	2942	Cholera.	13	6	August.	August.	0.20	46.15
			Diarrhoea.	"	"	"	"	"	"
	Jail.	1047	Cholera.	61	28	August.	September.	2.67	45.90
			Diarrhoea.	50	2	"	"	0.19	4.00
	Artillery.	95	Cholera.	1	1	24 th Augt.	24 th Augt.	1.05	100.00
1852.			Diarrhoea.	"	"	"	"	"	"
	2 ^d European Regt.	1048	Cholera.	27	6	10 th August.	7 th September.	0.57	22.22
			Diarrhoea.	9	0	"	"	"	"
	3 Corps N. I.	3048	Cholera.	2	1	8 th August.	8 th August.	0.03	50.00
			Diarrhoea.	10	0	"	"	"	"
1856.	Central Prison.	2939	Cholera.	264	80	25 th July.	30 th August.	2.72	30.30
			Diarrhoea.	54	"	"	"	"	"
	Artillery.	95	Cholera.	24	16	22 nd June.	7 th July.	14.73	58.73
			Diarrhoea.	6	"	"	"	"	"
	3 ^d European Regiment	920	Cholera.	289	87	10 th June.	9 th July.	8.80	28.00
1860.			Diarrhoea.	32	"	"	"	"	"
	3 Corps N. Inf't.	2942	Cholera.	73	34	4 th June.	15 th July.	0.92	45.33
			Diarrhoea.	26	"	"	"	"	"
	Central Prison.	3704	Cholera.	564	229	30 th May.	19 th July.	6.45	42.35
			Diarrhoea.	160	"	"	"	"	"
1861.	8/11 Artillery.	174	Cholera.	24	7	16 th August.	12 th September.	4.03	29.16
			Diarrhoea.	48	"	"	"	"	"
	3 ^d Batt ^r Pifte Brigade	1047	Cholera.	86	52	9 th August.	30 th September.	6.96	60.46
			Diarrhoea.	1720	0	"	"	"	"
	Police Batt ^r N. I.	1419	Cholera.	67	18	12 th August.	30 th September.	1.26	38.30
1861.			Diarrhoea.	13	0	"	"	"	"
	Central Prison	1997	Cholera.	816	175	10 th August.	30 th September.	8.76	27.44
			Diarrhoea.	203	0	"	"	"	"
	Artillery.	111	Cholera.	9	4	17 th July.	31 st July.	3.63	44.44
			Diarrhoea.	15	0	"	"	"	"
1861.	H. M ^s 12 th Highland	672	Cholera.	54	40	21 st June.	8 th August.	5.95	74.07
			Diarrhoea.	27	2	"	"	0.30	2.60
	H. M ^s 107 Regiment.	412	Cholera.	48	24	7 th July.	14 th August.	5.02	50.00
			Diarrhoea.	89	"	"	"	"	"
	12 th Regiment N. I.	569	Cholera.	72	5	18 th July.	4 th August.	0.87	47.66
1861.			Diarrhoea.	3	"	"	"	"	"
	Central Prison.	2959	Cholera.	109	66	1 st July.	10 th August.	2.23	36.92
			Diarrhoea.	89	1	"	"	0.03	1.23
1861.	Thomson Hospital	3000	Cholera.	97	115	9 th June.	25 th August.	3.50	58.37
			Diarrhoea.	175	12	"	"	0.40	6.86

(Signed; John Murray, M. D.

Deputy Inspector General of Hospitals. Agra Hospital.

APPENDIX.

COPY OF CAPTAIN WALTER'S REPORT ON THE ORIGIN AND COURSE OF CHOLERA IN THE BHURPORE TERRITORY IN 1861.

The Tehsildar of Gopalghur reports, that Cholera first broke out at the village of Kythwara, at the end of April. Kythwara is distant from Gopalghur eight miles, and from Bhurtpore about forty miles. After eight or nine days, the Cholera reached Gopalghur itself, and continued there with great violence for twenty or twenty-five days. It then went off to the villages towards the west Andwarie, Bunerie and others, two or three days afterwards it suddenly attacked the villages of Seekree, and others in the neighbourhood, and finally, spread all over the Pargunnah. The wind during the time the Cholera raged at Gopalghur, was generally from the East, sometimes from the North, and occasionally from the South. When Cholera first broke out at Kythwara, it had not been heard of anywhere else in the neighbourhood. It went on from Gopalghur to Paharie, and then in a Westerly direction towards Ferozepore and the Ulwar District.

The following Table shows the date of appearance, the duration and mortality from Cholera in the various towns on the Bhurtpore territory. The data are supplied by the Tehsildars of the towns and they may be relied on.

Table of deaths from Cholera in the different cities in the Bhurtpore territory during the Epidemic attack in the year 1861.

	Population.	Men.	Women.	Boys.	Girls.	Total.	1st Case.	Last Case.	REMARKS.
Gopalghur P.	49,131	326	154	160	139	779	26th Apl.	26th June.	1
Puharie,	26,000	93	62	37	23	215	4th May.	Do. Do.	2
Rama, ...	34,000	111	47	61	50	269	5th Do.	Do. Do.	3
Bunsawr,	.....	68	33	53	22	176	10th Do.	30th Do.	4
Deig, ...	.....	65	13	21	15	144	15th Do.	26th Do.	5
Oachein,	.....	20	14	12	16	62	15th Do.	June.	6
Byana, ...	.....	55	35	36	28	148	15th Do.	Do.	7
Wier, ...	.....	10	3	3	5	21	28th Do.	25th July.	8
Bhurtpore city,	57,000	106	71	57	42	276	5th June.	25th Augt.	9
Do. District,	28	7	17	12	64	5th Do.	Do.	10	
Nugger,	.....	41	23	25	14	103	6th Do.	25th July.	11
Kombher,	.....	39	26	29	19	113	6th Do.	26th Do.	12
Roopkhas,	.....	2	1	1	1	5	6th Do.	30th Do.	13

(Sd.) C. A. N. WALTER,

Officiating Political Agent,

Bhurtpore.

Bhurtpore, 18th October, 1861.

